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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/578,510

05/08/2006

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EXAMINER

DEFRANK, JOSEPH S

ART UNIT

PAPER NUMBER

3724

MAIL DATE

DELIVERY MODE

02/12/2009

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/578,510	Applicant(s) SUDA, NOBUYUKI	
	Examiner JOSEPH DEFRANK	Art Unit 3724	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 21 November 2008.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-4 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-4 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 21 November 2008 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

1. This action is in response to the amendment received on 11/21/08. Claims 1-4 are pending.

Specification

2. Applicant is reminded of the proper language and format for an abstract of the disclosure.

The abstract should be in narrative form and generally limited to a single paragraph on a separate sheet **within the range of 50 to 150 words**. It is important that the abstract not exceed 150 words in length since the space provided for the abstract on the computer tape used by the printer is limited. The form and legal phraseology often used in patent claims, such as "means" and "said," should be avoided. The abstract should describe the disclosure sufficiently to assist readers in deciding whether there is a need for consulting the full patent text for details.

The language should be clear and concise and should not repeat information given in the title. It should avoid using phrases which can be implied, such as, "The disclosure concerns," "The disclosure defined by this invention," "The disclosure describes," etc.

3. The abstract of the disclosure is objected to because it is a little too long (cut out one word). Correction is required. See MPEP § 608.01(b).

Drawings

4. The drawings were received on 11/21/08. These drawings are acceptable.

Claim Rejections - 35 USC § 103

5. The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.
6. Claims 1-4 are rejected under 35 U.S.C. 103(a) as being unpatentable over prior (related) art figure 7 in the current application (as previously cited; hereafter APA) in view of Wisner (US 3,747,447; as previously cited).

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7. With respect to claim 1, APA discloses a piercing device (90) comprising: a first shaft (94) having a first axis; a second shaft (95) having a second axis, the second axis being eccentrically arranged relative to the first axis (by distance δ); an outer tube (91) rotatably supported on the first shaft so that the outer tube can be driven for rotation; a plurality of piercing needles (93) rotatably supported on the second shaft, said plurality of piercing needles being spaced from each other in a circumferential direction projecting radially outwards, the piercing needles each being extendable and retractable relative to an outer surface of the outer tube via holes (96) formed in the outer tube. APA does not disclose the needles being mounted on needle support members (they are mounted directly to the inner tube 92). Further, because the needles are mounted directly to the inner tube, APA does not disclose the needles being independently rotatable about the second axis with respect to each other and needle restraining members rotatably supported on the second shaft for transmitting torque to the piercing needles when driven for rotation.

The art of Wisner discloses a piercing device comprising a plurality of piercing needles (60) mounted on needle support members (55) wherein the needles are independently rotatable about the axis of rotation because the needle support members are mounted on the cylinder (18) with a pivot joint (57). The needle support members are further confined by restraining members (90, 91) which prevent over rotation of the needles by providing a torque to the piercing needles. The art of Wisner uses piercing needles which are mounted on a rotatable wheel and are independently rotatably with respect to the axis of rotation in order to allow the pins to enter and leave the workpiece

in a vertical fashion to create "accurate reproductions of the shape of the perforating elements" (column 2 lines 15-18). Examiner notes that this is a solution to prevent "slashed trenches" (column 1 line 39) which are created when a piercing pin is used on a rotating piercing assembly but because of the extension, the pierced hole becomes elongated (column 1 lines 25-60). These "slashed trenches" are elongated holes as shown in figure 5; the current art of Wisner allows for normal circular holes (figure 6) to be created. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to modify the piercing device of APA to have the needles mounted on a support member which is independently rotatable with respect to the second axis, but still confined by needle restraining members, in view of the art of Wisner in order to create circular holes instead of stretched holes.

8. With respect to claim 2, APA discloses the piercing device wherein said outer tube and said needle support members are connected to a driving means for driving them at a constant speed. The needle support members are mounted on an inner tube (92) and the inner tube and outer tube complete the same number of rotations per minute. Examiner notes that if the two sets didn't complete the same number of rotations per minute, the needles would crash into the side wall or inner wall of the outer tube.

9. With respect to claims 3 and 4, APA discloses the piercing device wherein a rotating radius of the outer surface of the outer tube (91) and a rotating radius of a tip end of the plurality of piercing needles are the same with respect to each other (see positions C and A where the radii are the same; also note that at position B and 180

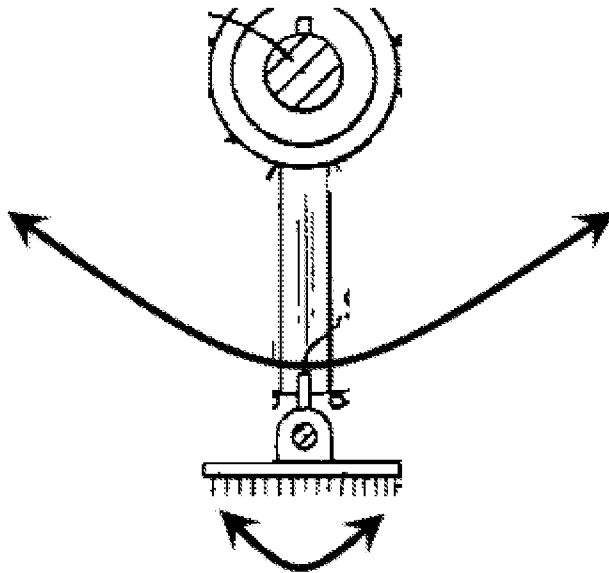
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degrees from B the distance that 93 is protruding past the surface is the same distance as 93 is withdrawn at the opposite position) but does not explicitly disclose that the amount of eccentricity of the first and second shafts is within a range of 10-15 mm. However, examiner notes that this dimension is dependent on the scale of the piercing device. If the piercing device is large and the dimensions are kept to scale, the amount of eccentricity will be proportionately large. If the piercing device is small and the dimensions are kept to scale, the amount of eccentricity will also be proportionately small. It would have been obvious to one having ordinary skill in the art at the time the invention was made to scale the device of APA up or down to have an eccentricity of 10-15 mm, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980). In this case, the eccentricity is dependent on what is intended to be pierced. Obviously, the more eccentric the shafts are, the further the piercing elements will protrude. For a thicker material, a higher eccentricity is needed to fully pierce.

Response to Arguments

10. Applicant's arguments filed with respect to claim 1 have been fully considered but they are not persuasive. Applicant argues that Wisner does not disclose the plurality of piercing needles being independently rotatable about the second axis. Examiner respectfully disagrees. Even though the combined apparatus of APA in view of Wisner discloses the piercing needles mounted on support members having pivots off of the center of the second axis, the needles themselves still can be described as rotating independently about the second axis. For an object to rotate about an axis, the object

does not need to have the center of rotation be at the axis. Objects still rotate relative to points, just at a distance. The smaller pivot (as shown in the copied figure below) still clearly shares a small portion of rotation about the main rotational axis of the cylinder, especially at the position shown below.



Conclusion

11. **THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of

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the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSEPH DEFRANK whose telephone number is (571)270-3512. The examiner can normally be reached on Monday - Thursday; 9am-6pm EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Boyer Ashley can be reached on (571) 272-4502. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Jason Daniel Prone/
Primary Examiner, Art Unit 3724

Joseph De Frank
Examiner
Art Unit 3724

JD
2/8/09
/J. D./
Examiner, Art Unit 3724